REMARKS

This amendment is in response to the final office action dated February 21, 2007 and timely filed with a request for continued examination.

Claims 1 – 20 are pending as of the date of the office action. Claims 11 – 16 were previously withdrawn. Claims 1 – 10 and 17 – 20 are at issue.

The office action rejects claims 1 – 6 under 35 U.S.C. § 102 based on *Tokuda*. The action rejects claims 7 – 10 under 35 U.S.C. § 103 based on a suggested combination of *Tokuda* in view of *Rakib*. Applicant respectfully traverses.

Claims 17 – 20 stand allowed.

I. Status of the Amendments

Independent claim 1 has been amended above. No claims were canceled.

II. Response to Prior Art Rejections

As an initial matter, applicant would like to thank the examiner for discussing this application in the telephonic interview on April 30, 2007. The telephonic interview was held between the examiner and the below-signed representative to discuss the outstanding prior art rejections and subject references. No exhibits, other illustrations, other prior art, other prior art rejections, or any other pertinent matters, as set forth in MPEP §713.04, were discussed during the telephonic interview. No agreement was reached on the outstanding prior art rejections.

Pursuant to MPEP §713.04, the applicant respectfully requests the examiner to check the accuracy of the above interview summary and respond to the same, if unacceptable.

The following remarks are in line with the points discussed in the telephonic interview and demonstrate that neither *Tokuda* nor *Rakib* teach or suggest the recited subject matter. Indeed, *Tokuda* and *Rakib* are not even directed to the problems addressed by the

present application, in that *Tokuda* and *Rakib* provide no mechanism for determining if a notch filter has failed nor any mechanism for bypassing failed notch filters.

With the present application, the inventors recognized a desire to not only control a notch filter to filter narrowband interference, but also a desire to separately determine if that notch filter is operating properly. See e.g., Application p. 3, ll. 11-13. A properly operating notch filter has been tuned to remove a narrowband interference portion of a wideband communication signal. Yet, if that notch filter fails to operate, the notch filter may fail to filter any interference signal or (in a worse case scenario) may filter out a "clean" portion of the wideband communication signal. In either case, merely setting the notch filter to operate without additionally determining if it is doing so properly may result in substantial performance degradation.

To address this problem, the application describes numerous techniques including some that use a controller adapted to control the notch module to filter narrowband interference **and** to separately determine if the notch module, once controlled, is operating properly. The controller, for example, is adapted to bypass the notch filter when it is determined that the notch filter is not operating properly. FIG. 10 provides an example implementation in which a block 210 performs a fail condition check, described in more detail with reference to FIG. 15. The fail condition check may include a gross failure check to determine if all of the notch filters within an adapted notch filter (ANF) module are operating properly. The application also depicts various examples where a dedicated bypass switch, in parallel with the notch filter, is used to bypass a received signal from passing through a notch filter when that notch filter has failed to operate properly. See, e.g., FIGS. 6 – 8.

The *Tokuda* and *Rakib* patents are quite different from that described above, in that neither *Tokuda* nor *Rakib* are concerned with determining if a notch filter is operating properly, nor are they concerned with bypassing a notch filter because it is not operating properly.

Tokuda is directed to a dual mode cellular telephone system in which narrowband interference is removed by a notch filter controlled (i) by a disturbing signal

detecting circuit in one instance and (ii) by a frequency detection circuit in another instance. In both instances, control signals are provided to the notch filter to change the notch filter frequency until it matches that of the incoming narrowband interference. Column 8, lines 21-53 describe the first instance, which is shown in FIG. 8 of *Tokuda*, while column 9, lines 15 – 30 describe the second instance, which is shown in FIG. 12 and relied upon by the office action. In both instances, *Tokuda* assumes that the notch filter is operating properly, and thus *Tokuda* nowhere describes determining if the notch filter is not operating properly.

The discussion at column 9, lines 15 – 30 of *Tokuda* is particularly relevant to the differences between *Tokuda* and the recited claims. Here, *Tokuda* describes an ability to control the ON/OFF state of a notch filter by using a frequency detection circuit 107 to determine if a narrowband interference signal exists. The circuit 107 does not assess whether the notch filter is operating properly, instead the circuit 107 observes whether the output level of the receiver signal (i.e., the **input signal** to the notch) is below a predetermined reference level or not. It is this input signal that controls notch filter operation, not the operability of the notch filter. For receiver signals below the reference level, it is assumed that no interference signal exists, and the notch filter is maintained in an OFF state. For receiver signals above the reference level, it is assumed that an interference signal exists, and the notch filter is turned ON. At no point, for either determination, does *Tokuda* teach or suggest taking the step of determining the further question of whether that notch filter, once turned on, is operating properly. Once the notch filter has been turned on, the notch filter is presumed to be operating properly. *Tokuda* is silent to anything else. Indeed applicant questions how the office action could construe an ON/OFF control based on a signal entering a circuit as teaching control based on that circuit's failure to operate on that signal. The examiner's position seems to be putting the cart before the horse.

Rakib is similarly (if not more) deficient. *Rakib* teaches a circuit for narrowband excision in a CDMA system. Filters divide the input signal into a plurality of narrow sub-bands. In the principle example, a detection and cancellation circuit determines if there is an interference signal in the sub-band by comparing an average power to a threshold. Interference signals that are present are attenuated. Some examples reduce the sample rate of the received signal before passing that signal to the detection/cancellation filter. In any case,

the office action points to a brief discussion in *Rakib* indicating that the detection/cancellation circuits may be achieved by a notch filter. But the features in either embodiment are the same. There is no determination of whether the filter has failed to operate or not. The controller only sets the coefficients of the notch filter to match the center frequency of the notch filter with that of the narrowband interference signal. *Rakib* 9:54-65.

Applicant respectfully, but strongly, submits that it should be apparent from the foregoing that neither *Tokuda* nor *Rakib* teach determining when a notch filter is not operating properly and bypassing such a notch filter.

Turning now to the particular recitations of the claims, claim 1 recites:

> 1. A method of detecting and eliminating narrowband interference in a wideband communication signal having a frequency bandwidth with narrowband channels disposed therein, the method comprising:
>
> scanning at least some of the narrowband channels to determine signal strengths in at least some of the narrowband channels;
>
> determining a threshold based on the signal strengths in at least some of the narrowband channels;
>
> identifying narrowband channels having signal strengths exceeding the threshold;
>
> assigning filters to at least some of the narrowband channels having signal strengths exceeding the threshold;
>
> determining if the assigned filters are operating properly by testing for a failure condition indicating that at least one of the assigned filters is not operating properly; and
>
> bypassing any of the assigned filters that are not operating properly by bypassing the wideband communication signal through a separate switch.

It is evident from the foregoing that neither *Tokuda* nor *Rakib* teach the recited subject matter of claim 1. Neither reference determines "if the assigned filters are operating properly by testing for a failure condition indicating that at least one of the assigned filters is not operating properly." Neither reference bypasses "any of the assigned filters that are not operating properly by bypassing the wideband communication signal through a separate switch." As noted above, the ON/OFF feature of *Tokuda* is not triggered by whether the notch filter is operating properly or not, but rather based on whether the received signal prior to notch filtering is above a reference level or not.

For at least the foregoing reasons, the rejections of claims 1 – 5 are traversed.

Furthermore, the rejection of independent claim 6 is traversed for similar reasons to those outlined above, namely, neither *Tokuda* nor *Rakib* teach "a bypass switch adapted to bypass the notch module when the bypass switch is enabled" or a controller adapted "to determine if the notch module is operating properly based on a failure condition test and to enable the bypass switch when the notch module is not operating properly."

In addition to these substantive grounds of traversal, applicant separately traverses the rejection of claim 6 because the rejection is legally improper. In rejecting claim 6, the office action points to its analysis of claim 1, but claim 6 – an apparatus claim – recites subject matter not recited in claim 1, namely a bypass switch. The examiner cannot sustain a *prima facie* anticipatory showing without showing where it is believed that all the recited elements are taught in the prior art. The examiner did not indicate where it is believed that the prior art taught a bypass switch. The rejection is therefore improper and traversed. See, e.g., Verdegall Bros. V. Union Oil Co. of California, 814 F.2d 628, 631 (Fed. Cir. 1987) (stating that a claim is anticipated "only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference"). For at least the foregoing reasons, the rejections of claims 6 – 10 are traversed.

In view of the above amendment, applicant believes the pending application is in condition for immediate allowance.

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Respectfully submitted,

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